

Sistema de Administración de Calidad

	<i>Clave</i>	<i>Nombre</i>	<i>Revisión</i>	<i>Hoja</i>
	R-03-SAP	Programa Sintético	00-06/17	1de1

Área Curricular	Basic		
Campo Disciplinar	Experimental Sciences		
Unidad de Aprendizaje	The science of motion	Semestre	2nd
Periodo Académico	Jan – Jun 2020		
Coordinador de Cuerpo colegiado:	Hugo Contreras Heredia		

PROPÓSITO:

In the Learning Unit The Science of Movement the student applies the principles and laws of Classical Mechanics, to situations of daily life through the development of theoretical, practical and experimental activities contributing to the formation of his critical thinking, sitting the scientific bases that underlie systems, rules and principles of one of the most common phenomena that occurs in nature: the movement of bodies.

COMPETENCIAS GENERALES:

8. Uses traditional and cutting-edge research methods and techniques for the development of his academic work, the exercise of his profession and the generation of knowledge.

Attributes:

- Choose the appropriate procedures in the resolution of a problem.
- Understands in a reflexive way the phases that will lead him to achieve his goal.
- Prepares and designs hypotheses taking into account the principles, laws and concepts.
- Process information using information and communication technologies.

COMPETENCIAS DISCIPLINARES:

8. Explain the operation of machines commonly used from scientific notions.

9. Designs models or prototypes to solve problems, satisfy needs or demonstrate scientific principles.

10. It links the symbolic expressions of a phenomenon of nature and the observable features to the naked eye or through scientific instruments or models.

14. Applies safety standards in the handling of substances, instruments and equipment in carrying out activities of their daily lives.

CONTENIDO:

Stage 1. Physics: the science of measure.

1.1 Introduction to physics

1.2 History of physics

1.3 Measure and physical quantity

1.4 International system of weights and measures

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1.5 Conversion of units through a conversion factor

1.6 Fundamental kinematic magnitudes: distance, displacement, speed, velocity, acceleration, mass and weight

1.7 Instruments of measure

1.8 Security measures while using instruments of measure

Stage 2. Kinematics and laws of motion of bodies.

2.1 Basic concepts of kinematics

2.2 Basic concepts of dynamics

2.3 Laws of motion: 1st, 2nd and 3rd law of Newton

Stage 3. Gravitation, work, power and energy.

3.1 Gravitation

3.2 Work and power

3.3 Energy

Stage 4. Machines, an application of the principles and laws of motion.

4.1 Simple machines: lever, inclined plane, pulley and lathe

4.2 Lever

4.3 Inclined plane

4.4 Lathe

4.5 Pulley

4.6 Compound machines: hoist, gear system

CRITERIOS DE EVALUACIÓN:

Formative evaluation

Diagnostic evaluation	(no value)
Portfolio 1	8%
Portfolio 2	8%
Portfolio 3	8%
Portfolio 4	8%
PIA	8%

Sumative evaluation

Partial exam	10%
Mid term exam	15%
Internal global exam	10%
External global exam	25%

Total **100%**

BIBLIOGRAFÍA:

Basic.

Walker, J. (2014). Physics. Boston: Pearson.

Complementary.

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Cruz et al., (2019). La Ciencia del Movimiento. Mexico: UANL.

Electronic.

Stage 1.

<http://www.educaplus.org/movi/index.html>

<http://www.fisicanet.com.ar/>

www.masteringphysics.com

Stage 2.

<https://phet.colorado.edu/es/simulations/category/physics/motion>

<https://phet.colorado.edu/es/simulation/gravity-force-lab>

www.masteringphysics.com

Stage 3.

<https://phet.colorado.edu/es/simulation/energy-skate-park-basics>

<https://phet.colorado.edu/es/simulation/legacy/energy-skate-park>

www.masteringphysics.com

Stage 4.

<http://www.msichicago.org/play/simplemachines/>

<http://phet.colorado.edu/en/simulations/translated/es>

www.masteringphysics.com

Notes:

- a) The portfolios 1 and 3 will be conditioned according to the rules of the institution with the First partial exam and the Internal global exam respectively.
- b) The students that fail to upload the corresponding activity to the Nexus platform will be penalized with 1 point of the final score of the portfolio.